NOAA
R 226
NOAA
R 226

GENERAL NOTES

1. ARABIC NUMERALS WITH THE LETTERS "PROJ" ABOVE REPRESENT NAVIGATIONAL DRAFT MARKS. REMAINING ARABIC NUMERALS REPRESENT CALCULATIVE DRAFT MARKS.

2. DIMENSIONS:
   (A) LONGITUDINAL LOCATIONS OF ALL ITEMS ARE GIVEN FROM THE STERN REFERENCE POINT (AFT END OF MAIN DECK AT CENTERLINE).
   (B) HEIGHTS OF ALL ITEMS ARE GIVEN FROM THE BOTTOM OF THE KEEL AMIDSHIPS EXTENDED.
   (C) LONGITUDINAL LOCATIONS AND HEIGHTS OF SIDE BLOCKS ARE TAKEN TO THE AFT SIDE OF BLOCKS.
   (D) REFERENCE DIMENSIONS FOR DOCKING PLUGS ARE TAKEN FROM THEIR CENTER.

3. COMPLETE PAINTING OF HULL:
   (A) IN ORDER TO CLEAN AND PAINT THE ENTIRE BOTTOM OF THE VESSEL IN THREE SUCCESSIVE DOCKINGS. THE FOLLOWING SEQUENCE OF DOCKING POSITIONS OF THE VESSEL ARE NECESSARY:
      (1) POSITION NO. 1
      (2) POSITION NO. 2
      (3) POSITION NO. 3
   (B) REPEAT CYCLE OF POSITIONS. ASCERTAIN FROM VESSEL THE POSITION OF VESSEL AT ITS LAST DOCKING.

4. DIMENSIONS IN THE TABLE OF OFFSETS ARE GIVEN IN MILLIMETERS.

5. KEEL BLOCKS SHALL BE CONFIGURED TO CLEAR DRAIN PLUGS.

6. BLOCKING:
   (A) BLOCKING SHOWN ON THIS PLAN IS THAT REQUIRED FOR BLOCKING UNDER ORDINARY UNDAMAGED CONDITIONS.
   (B) KEEL BLOCKS:
      (1) KEEL BLOCKS SHALL BE ARRANGED IN PIERS CONSISTING OF 914mmx914mmx305mm HARDWOOD TIMBERS MOUNTED WITH 50 MM MIN THICKNESS SOFTWOOD CAP BLOCKS, UNO. LONGITUDINAL SPACING AND ALL OTHER NEEDED INFO IS LISTED IN KEEL BLOCK TABLE OF OFFSETS.
      (2) NO BLOCKS OR SHORES ARE REQUIRED UNDER ORDINARY CONDITIONS OF DOCKING UNDER THE STERN AFT OF FRAME 83.
   (C) SIDE BLOCKS:
      (1) SIDE BLOCKS SHALL BE LOCATED (P) AND (S) UNDER MAJOR TRANSVERSE OR LONGITUDINAL STRUCTURE AT DISTANCES OFF CENTERLINE AS INDICATED ON TABLE OF OFFSETS.
      (2) SOFTWOOD CAPS ARE REQUIRED, 50 MM MIN THICKNESS.
      (3) SIDE BLOCKS ARE NUMBERED FROM AFT TO FORWARD WITH THE MOST AFT BLOCK AS NO. 1.

7. ALLOWABLE BLOCK PRESSURE IS 500 PSI (35.15 KG/CM^2).
8. VESSEL DISPLACEMENT USED FOR BLOCK BEARING PRESSURES IS 2613.37 MT BASED ON AN EVEN KEEL DRAFT OF 6.2 M.
9. THE CENTERBOARD MUST BE RETRACTED DURING DOCKING EVOLUTIONS.
10. VESSEL MUST BE DOCKED WITHOUT LIST AND EXCESSIVE TRIM. MAXIMUM ALLOWABLE TRIM IS 580 MM.
11. BLOCKS IN EXCESS OF 1829 MM IN HEIGHT SHALL BE STRAPPED TOGETHER USING ANGLES, AND SIDE BLOCKS SHALL BE TIED TOGETHER LONGITUDINALLY WITH STEEL RODS.
12. A HARD CAP IN CONJUNCTION WITH A SOFT WOOD STRATUM BELOW MUST BE USED FOR KEEL BLOCKS 1–4, 16 & 17.
13. DRYDOCK BEARING PRESSURES DERIVED FROM REFERENCE 12 & 13.
14. SIDE BLOCKS IN EXCESS OF 1829 MM IN HEIGHT SHALL HAVE A BASE 3X WIDER AT THE BOTTOM THAN AT THE TOP.
15. ADD OUTBOARD BLOCK #1 P/S AFTER VESSEL IS LANDED IF KEEL BLOCK #1 IS NEEDED TO BE REMOVED FOR DRAIN PLUG ACCESS OR PAINTING.
16. KEEL BLOCK #1 TO BE REMOVED AFTER VESSEL IS LANDED FOR PAINTING OR WHEN ACCESS TO DRAIN PLUGS IS NECESSARY.

CRITICAL DIMENSIONS

LENGTH OVERALL	=	63.57 m
LENGTH BETWEEN PERPENDICULARS	=	58.00 m
LENGTH ON DWL	=	61.00 m
BEAM, EXTREME	=	15.00 m
BEAM, ON DWL AT STA OF MAX AREA	=	15.00 m
BEAM, ON DWL AT MIDSHIPS	=	15.00 m
DRAFT, TO DWL, AMIDSHIPS	=	5.35 m
DRAFT, MLD BASELINE TO DWL	=	5.90 m
SLOPE OF KEEL DRAG	=	1: 37.12

BASELINE LOCATED .55 m BELOW MLD KEEL AT MIDSHIPS
COMPLEMENT 39 (TOTAL)

⚠1 DISPLACEMENT PROPERTIES

VESSEL CONDITION	DISPLACEMENT	FWD DRAFT (M) @ FP	MEAN DRAFT (M) @ MIDSHIPS	AFT DRAFT (M) @ AP	VCG (M, ABL)	LCG (AFT OF FP)
LIGHTSHIP	1757.45	5.08	5.94	6.80	7.31	32.63
VESSEL IN BURNT OUT CONDITION	2334.02	5.31	5.74	6.17	7.30	30.37
VESSEL IN DEPARTURE CONDITION	2551.79	5.95	6.09	6.23	7.00	30.08

AS-BUILT ⚠1 2

PARTS LIST

ITEM NO.	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC	PART NO.	REMARKS	UNIT WT LBS
1	6	EA	ANODE, 2 1/2"x6"x12", BOLT ON	ZINC	TYPE ZHC	–	GALVOTEC OR EQUAL	42#
2	40	EA	TEARDROP ANODE, MODIFIED TO BOLT ON	ZINC	TYPE ZTS	–	GALVOTEC OR EQUAL	5#

ANODE LOCATING TABLE

LOCATION	COMPT NUMBER	ANODES REQD	ANODE TYPE	REMARKS
CENTERBOARD TRUNK	4–39–0	6	TYPE ZHC	LOCATE ONE EACH ON FWD AND AFT BHDS, AND TWO EQUALLY SPACED ON LONG'L BHDS
RUDDER	–	8	TYPE ZTS	LOCATE ON FLAP & LINKAGE
BOWTHRUSTER TUNNEL AROUND INLETS	–	32		4 PER INLET, LOCATED AT QUARTER POINTS AROUND INLET 5 FT MIN FROM IMPELLER

RESERVATIONS

DRAWING INDEX

SH	DESCRIPTION
6	HULL OPENINGS/DISCHARGES & KEEL BLOCK OFFSETS TABLES
5	SIDE BLOCK OFFSETS & BEARING PRESSURES
4	BLOCKING ARRANGEMENT–SECTIONS
3	BLOCKING ARRANGEMENT–PLAN VIEWS
2	BLOCKING ARRANGEMENT–PLAN & ELEVATION
1	TITLE SHEET

REFERENCES

NO.	TITLE	DRAWING NUMBER
14	THRUSTER INSTALLATION ARRANGEMENT (ELLIOT–VENDOR DWG)	5104WG
13	DOCKING INSTRUCTIONS & ROUTINE WORK IN DRYDOCK	NAVSEA 59086-7G-STM-000
12	AN INTRODUCTION TO DRYDOCKING PRINCIPLES & TECHNIQUES	–
11	TRANSDUCER ARRANGEMENTS & INSTALLATION	M282–461–FE93
10	OUTBOARD PROFILE	M282–085–FA01
9	BILGE KEEL LAYOUT	M282–100–FH54
8	MOORING & TOWING FITTINGS–KEY PLAN & FDNS	M282–170–FH28
7	IMPRESSED CURRENT CATHODIC PROTECTION ARRG'T & DET	M282–624–FE70
6	BOSSING & STERN FRAME SCANTLINGS	M282–110–FH18
5	HULL TRANSOM SCANTLINGS, FR 82–TRANSOM	M282–100–FH05
4	HULL STERNBODY SCANTLINGS, FR 49–82	M282–110–FH04
3	HULL MIDBODY SCANTLINGS, FR 19–49	M282–110–FH03
2	HULL FOREBODY SCANTLINGS, FR 0–18	M282–100–FH02
1	GENERAL ARRANGEMENT	M282–085–FA02

REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED
1		1. SH 1, DISPLACEMENT PROPERTIES; UPDATED DISPLACEMENT, DRAFT AND CG DATA TO MATCH M283–100–FC12 REV 1. 2. THIS REVISION REFLECTS AS–BUILT CONDITIONS FOR M283. ITEMS 1 & 2 PER ENGINEERING DEVELOPMENT	7/28/09 MDP	

DOCUMENT DISTRIBUTION RECORD

DATE IN ROOM	6/4/08													
ISSUE DATE	6/10/08													
REV#	0	1												
PROJECT ENG	1	1												
PROJECT MGR	1	1												
ABS														
USPH														
USCG														
HMP PC	1	1												
PROD DESIGN GROUP	1	1												
HULL MGR														
HULL LEAD	1	1												
HVAC														
JOINER														
HPG PC	1	1												
NOISE CONT														
CHAND LLC	1	1												
ISSUED BY	DH													

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VT Halter Marine, Inc.
Vision Technologies Systems

VESSEL: FRV40 CLASS 63m FISHERIES RESEARCH VESSEL

TITLE: DOCKING DRAWING

DRAWN BY	ABS APPV
MDP 6/3/08	
CHECKED BY	USCG APPV
DH 6/4/08	
APPROVED BY	OWNER APPV

HULL NO	CAGE CODE	SIZE
1956	3B213	D
ESTIMATE NO	SCALE	
00–104	NONE	

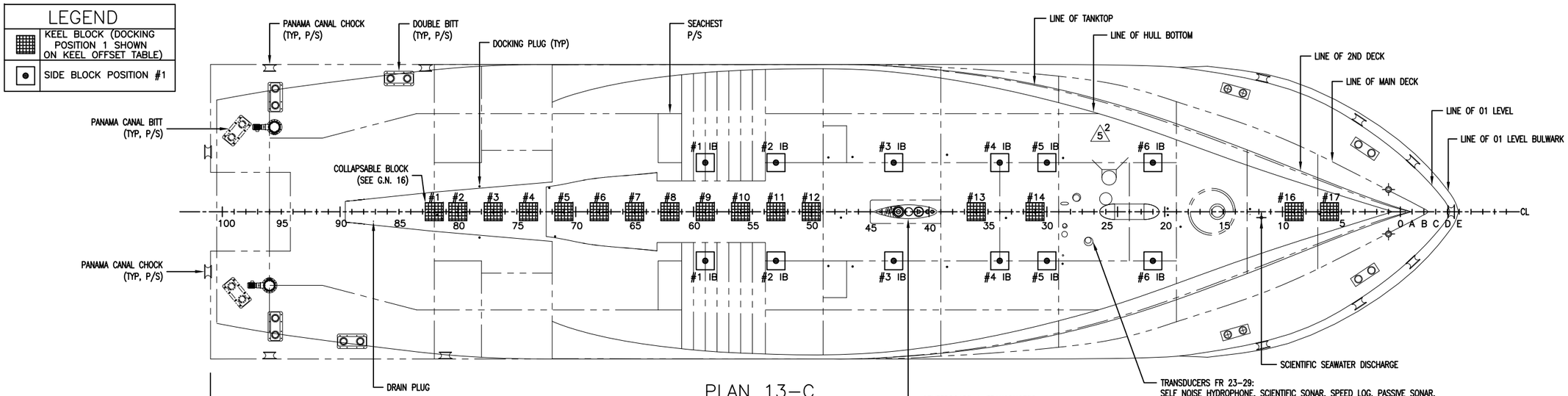
JOB NO.	ITEM	DELIVERABLE	SHEET	REV
M283	085	FA04	001	01

FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWGS | SHEET 1 OF 6

PLOT: 1=1

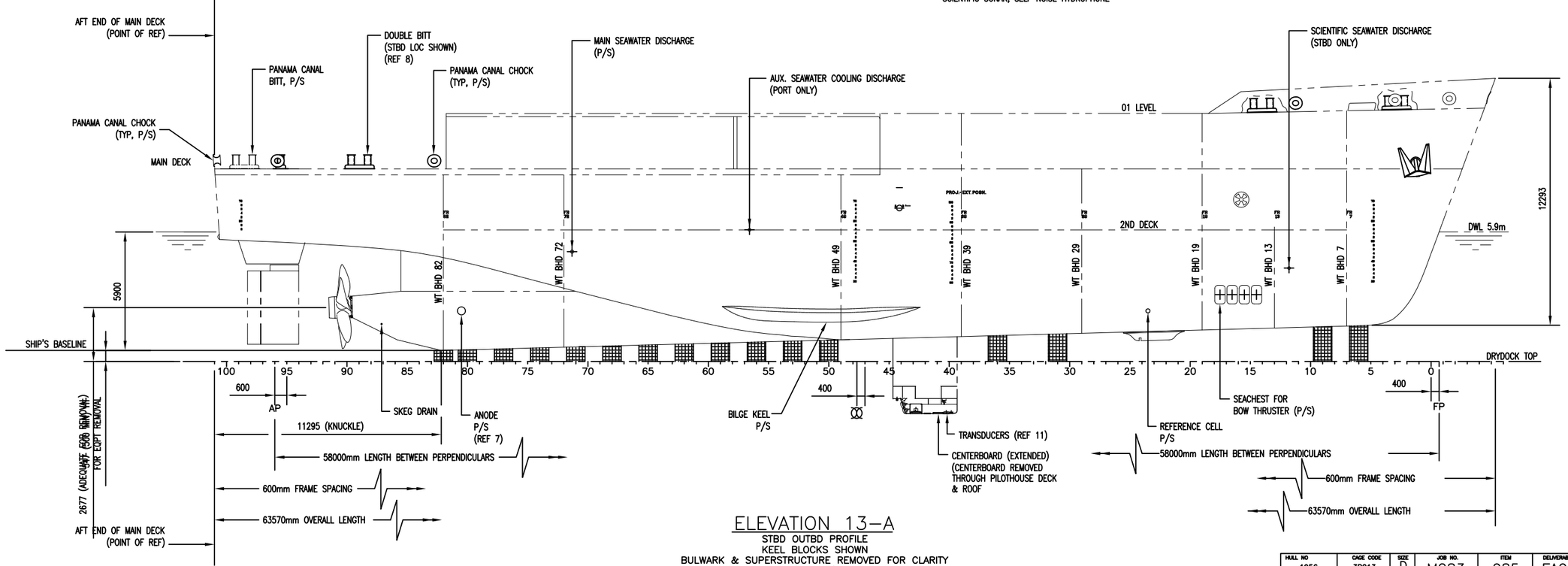
DWG NO. M283–085–FA04 SH 1

LEGEND	
	KEEL BLOCK (DOCKING POSITION 1 SHOWN ON KEEL OFFSET TABLE)
	SIDE BLOCK POSITION #1



PLAN 13-C
BLOCK POSITION #1

STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)



ELEVATION 13-A

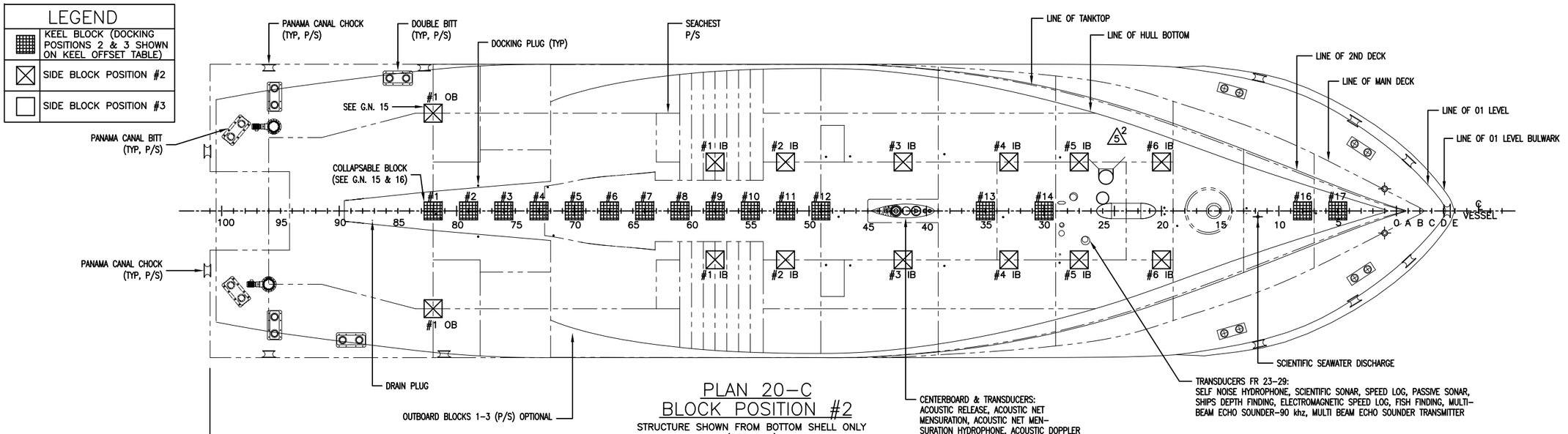
STBD OUTBD PROFILE
KEEL BLOCKS SHOWN
BULWARK & SUPERSTRUCTURE REMOVED FOR CLARITY
(REF 10)

DWG NO. M283-085-FA04 SH 2

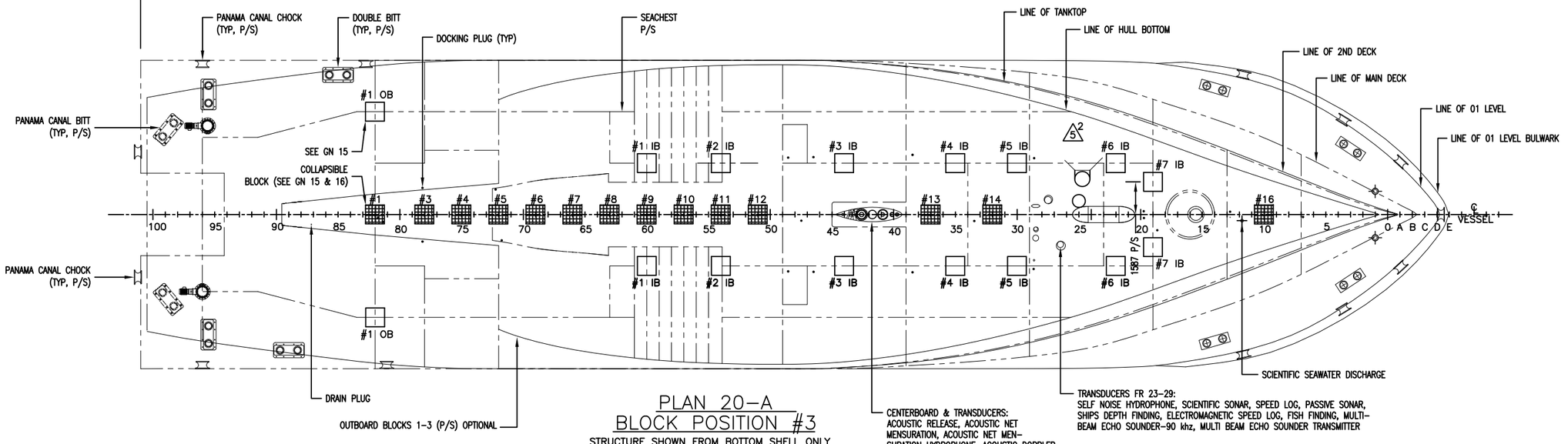
HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	002	00
ESTIMATE NO	SCALE		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 2 OF 6	
00-104	1:100						

PLOT: 1=100

LEGEND	
▦	KEEL BLOCK (DOCKING POSITIONS 2 & 3 SHOWN ON KEEL OFFSET TABLE)
⊠	SIDE BLOCK POSITION #2
□	SIDE BLOCK POSITION #3



PLAN 20-C
BLOCK POSITION #2
STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)

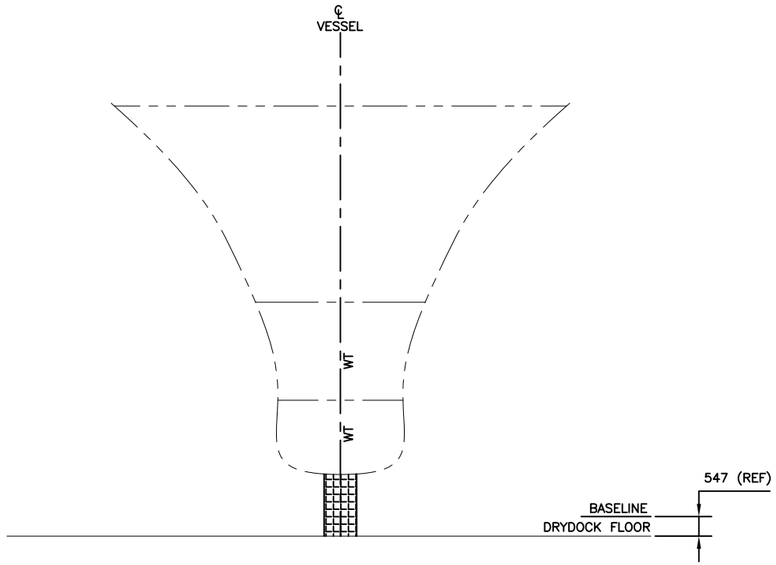


PLAN 20-A
BLOCK POSITION #3
STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)

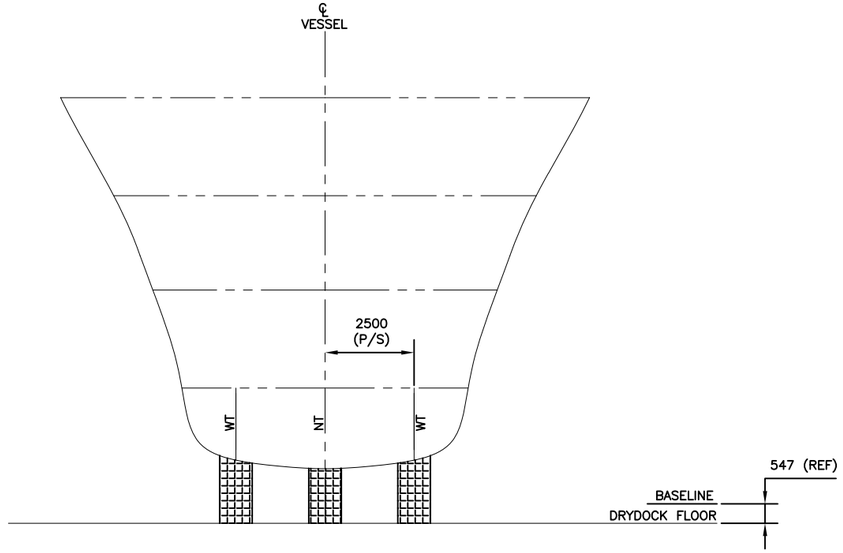
DWG NO. M283-085-FA04 SH 3

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	003	00
ESTIMATE NO	SCALE						
00-104	1:100		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 3 OF 6	

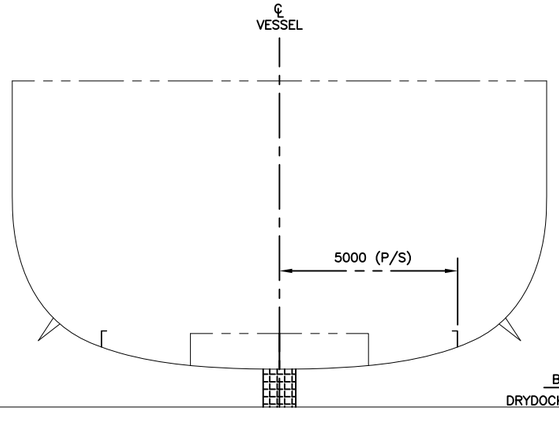
PLOT: 1=100



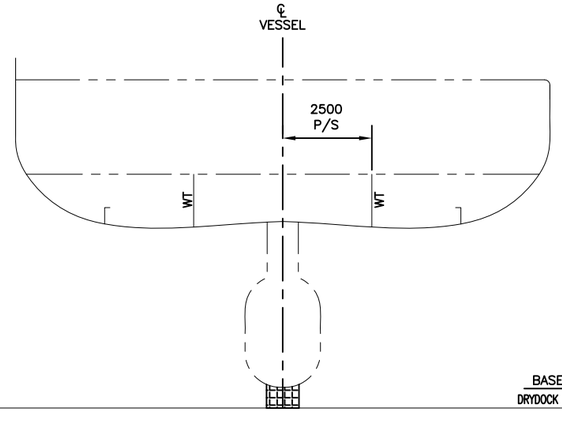
SECTION 23–C
FR 9 LKG FWD



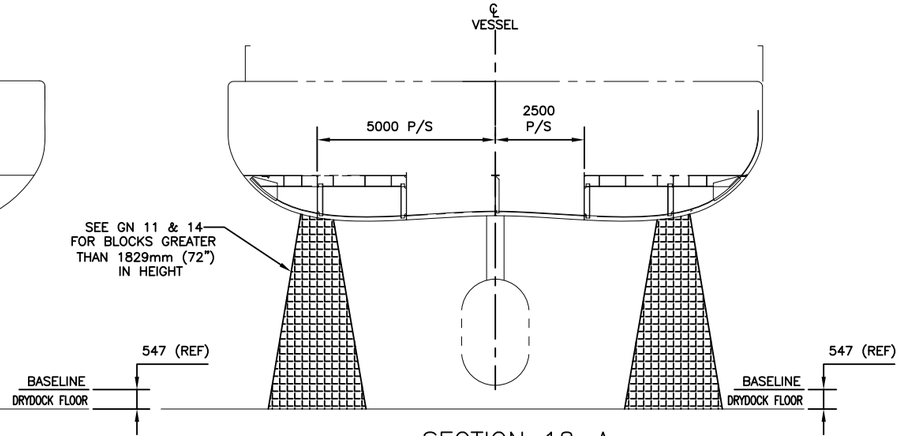
SECTION 20–C
FR 21 NT LKG FWD



SECTION 23–A
FR 50 LKG FWD



SECTION 20–A
FR 80 LKG FWD



SECTION 18–A
FR 83 LKG FWD

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	04	00
ESTIMATE NO	SCALE		FILE R:\M283\FUNCTIONAL DESIGN\ISSUED\HULLDWG			SHEET 4 OF 6	
00–104	1:75						

PLOT: 1=75

DWG NO. M283–085–FA04 SH 4

SIDE BLOCK POSITION NO. 1

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (ADD HEIGHT OF KEEL BLOCK #1 TO OBTAIN TOTAL HT)							
	AFT INBD CORNER	AFT MIDSPAN PT	AFT OUTBD CORNER	FWD INBD CORNER	FWD MIDSPAN PT	FWD OUTBD CORNER	LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
#1 IB	1220	1242	1278	1036	1060	1099	25200	4.718
#2 IB	685	715	761	637	671	719	28800	2.814
#3 IB	702	742	794	727	767	817	34800	15.160
#4 IB	859	901	956	887	931	989	40200	1.691
#5 IB	935	982	1044	965	1015	1081	42600	14.694
#6 IB	1126	1202	1314	1163	1251	1391	48000	16.533

SIDE BLOCK POSITION NO. 2

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (ADD HEIGHT OF KEEL BLOCK #1 TO OBTAIN TOTAL HT)							
	AFT INBD CORNER	AFT MIDSPAN PT	AFT OUTBD CORNER	FWD INBD CORNER	FWD MIDSPAN PT	FWD OUTBD CORNER	LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
#1 OB	4566	4653	4741	4740	4820	4901	12610	SEE G.N. 15
#1 IB	1097	1120	1158	930	955	996	25800	4.675
#2 IB	650	682	729	624	659	708	29400	2.781
#3 IB	719	759	809	744	784	834	35400	14.850
#4 IB	878	921	978	907	952	1011	40800	1.084
#5 IB	995	1047	1118	1026	1082	1159	44400	6.529
#6 IB	1151	1234	1364	1189	1288	1458	48600	14.905

SIDE BLOCK POSITION NO. 3

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (ADD HEIGHT OF KEEL BLOCK #1 TO OBTAIN TOTAL HT)							
	AFT INBD CORNER	AFT MIDSPAN PT	AFT OUTBD CORNER	FWD INBD CORNER	FWD MIDSPAN PT	FWD OUTBD CORNER	LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
#1 OB	4566	4654	4741	4740	4820	4901	11400	SEE G.N. 15
#1 IB	1493	1511	1544	1282	1303	1339	25800	4.734
#2 IB	801	828	871	706	736	781	29400	4.272
#3 IB	671	711	763	694	735	785	34200	15.926
#4 IB	821	863	915	849	892	946	39600	2.439
#5 IB	915	961	1021	945	993	1056	42600	14.536
#6 IB	1080	1144	1236	1115	1187	1294	47400	7.275
#7 IB	1065	1120	1175	1091	1152	1214	49200	13.118

DWG NO. M283-085-FA04 SH 5

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	38213	D	M283	085	FA04	005	00
ESTIMATE NO	SCALE		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 5 OF 6	
00-104	NONE						

PLOT: 1=1

TABLE FOR KEEL BLOCK NO. 1–17					
BLK NO	DOCKING POSITION NO	AFT SIDE OF BLOCK FROM AFT REF PT (mm)	HEIGHT OF BLOCK (AFT SIDE (mm)	HEIGHT OF BLOCK (FWD SIDE (mm)	BEARING PRESSURE PER BLOCK (KG/CM^2)
1	1	10945	633	565	SEE GN 16
	2	10945	633	565	7.078 (SEE GN 16)
	3	10945	633	565	9.145 (SEE GN 16)
2	1	12145	570	594	23.724
	2	12755	586	610	20.006
	3		SYMMETRIC		
3	1	13945	618	642	13.151
	2	14555	634	658	16.484
	3	13336	601	625	23.311
4	1	15745	665	689	17.781
	2	16355	682	706	16.850
	3	15136	649	673	13.959
5	1	17545	714	738	15.985
	2	18155	730	754	16.171
	3	16936	697	721	16.521
6	1	19345	762	786	15.922
	2	19955	778	802	15.783
	3	18736	745	769	15.423
7	1	21145	810	834	15.354
	2	21755	826	850	15.277
	3	20536	793	817	15.263
8	1	22945	857	882	15.071
	2	23555	874	898	14.950
	3	22336	841	865	15.007
9	1	24745	905	929	4.718
	2	25355	922	946	4.675
	3	24136	889	913	4.734
10	1	26545	953	977	15.491
	2	27155	970	994	15.314
	3	25936	937	961	15.691
11	1	28345	1002	1026	2.814
	2	28955	1018	1042	2.781
	3	27736	985	1009	4.272
12	1	30145	1051	1075	24.971
	2	30755	1067	1091	24.595
	3	29536	1034	1058	25.713
13	1	38545	1275	1299	21.630
	2	39155	1292	1316	21.414
	3	37936	1259	1283	22.859
14	1	41545	1357	1381	7.382
	2	42155	1374	1398	10.529
	3	40936	1340	1364	0.834
15	1		SYMMETRIC		
	2		SYMMETRIC		
	3		SYMMETRIC		
16	1	54745	1716	1740	27.866
	2	55355	1732	1756	26.804
	3	54136	1699	1724	11.439
17	1	56545	1765	1789	5.480
	2	57155	1785	1872	5.524
	3		SYMMETRIC		

LIST OF DOCKING PLUGS IN SHELL					
NO.	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DIST OFF CL SHIP
1	STBD	FWD	82	11519mm	150mm
2	STBD	FWD	82	11770mm	360mm
3	STBD	FWD	79	13693mm	1316mm
4	PORT	FWD	79	13693mm	1291mm
5	STBD	FWD	72	17535mm	1258mm
6	PORT	FWD	73	17242mm	1217mm
7	STBD	FWD	49	31467mm	2765mm
8	PORT	FWD	49	31467mm	2765mm
9	STBD	FWD	48	32109mm	300mm
10	PORT	FWD	47	32697mm	2790mm
11	STBD	FWD	47	32702mm	2790mm
12	PORT	FWD	39	37512mm	2900mm
13	STBD	FWD	39	37512mm	2810mm
14	STBD	FWD	34	40500mm	315mm
15	PORT	FWD	29	43422mm	2740mm
16	STBD	FWD	29	43397mm	2650mm
17	PORT	FWD	20	48748mm	160mm
18	STBD	FWD	20	48748mm	170mm
19	STBD	FWD	19	49387mm	765mm
20	PORT	FWD	13	52944mm	135mm
21	STBD	FWD	13	52944mm	135mm
22	STBD	FWD	7	56479mm	120mm

LIST OF DRAIN PLUGS IN SHELL					
NO	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DIST OFF CL SHIP
1	S	FWD	88	8300mm	480mm

LIST OF OPENINGS IN SHELL BELOW DWL									
NO.	SERVICE	SIZE OF PENETRATION	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DISTANCE OFF CL SHIP	HEIGHT ABV KEEL BOTTOM	REFERENCE
1	SCIENTIFIC SEAWATER DISCHARGE	150mm DIA	S	124 FWD	12	53526mm	2259mm	2966mm	
2	SCIENTIFIC SEAWATER DISCHARGE	150mm DIA	S	124 FWD	12	53526mm	300mm	0mm	
3	AUX. S.W. COOLING DISCHARGE	150mm DIA	P	250 FWD	57	26652mm	6431mm	5290mm	
4	MAIN SEAWATER DISCHARGE	170mm DIA	P/S	410 FWD	72	17812mm	6123mm	5662mm	
5	SEACHEST SUCTION	925x520	P/S	284 FWD	18	50086mm	2766mm	1735mm	
6	SEACHEST SUCTION	925x520	P/S	891 FWD	18	50693mm	2766mm	1719mm	
7	SEACHEST SUCTION	925x520	P/S	1498 FWD	18	51300mm	2964mm	1702mm	
8	SEACHEST SUCTION	925x520	P/S	2105 FWD	18	51907mm	2964mm	1686mm	

DWG NO. M283–085–FA04 SH 6

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	006	00
ESTIMATE NO	SCALE		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 6 OF 6	
00–104	NONE						

PLOT: 1=1